FIGURE 1

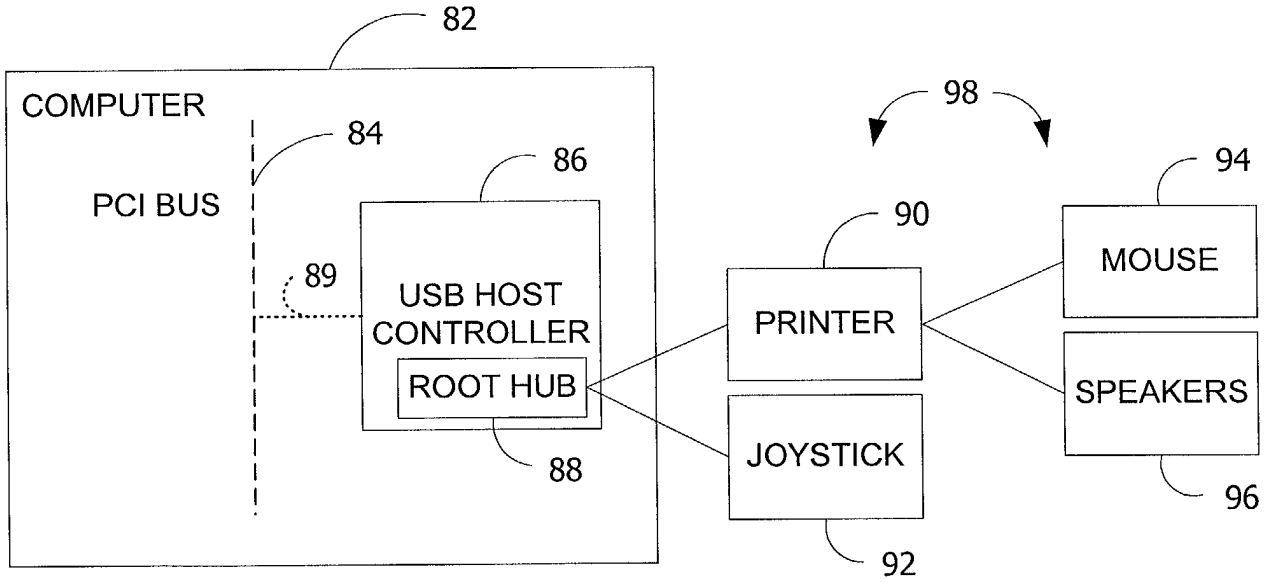

82
COMPUTER
84
PCI BUS
86
89
USB HOST
CONTROLLER
ROOT HUB
88
98
90
PRINTER
JOYSTICK
92
94
MOUSE
SPEAKERS
96

FIGURE 2

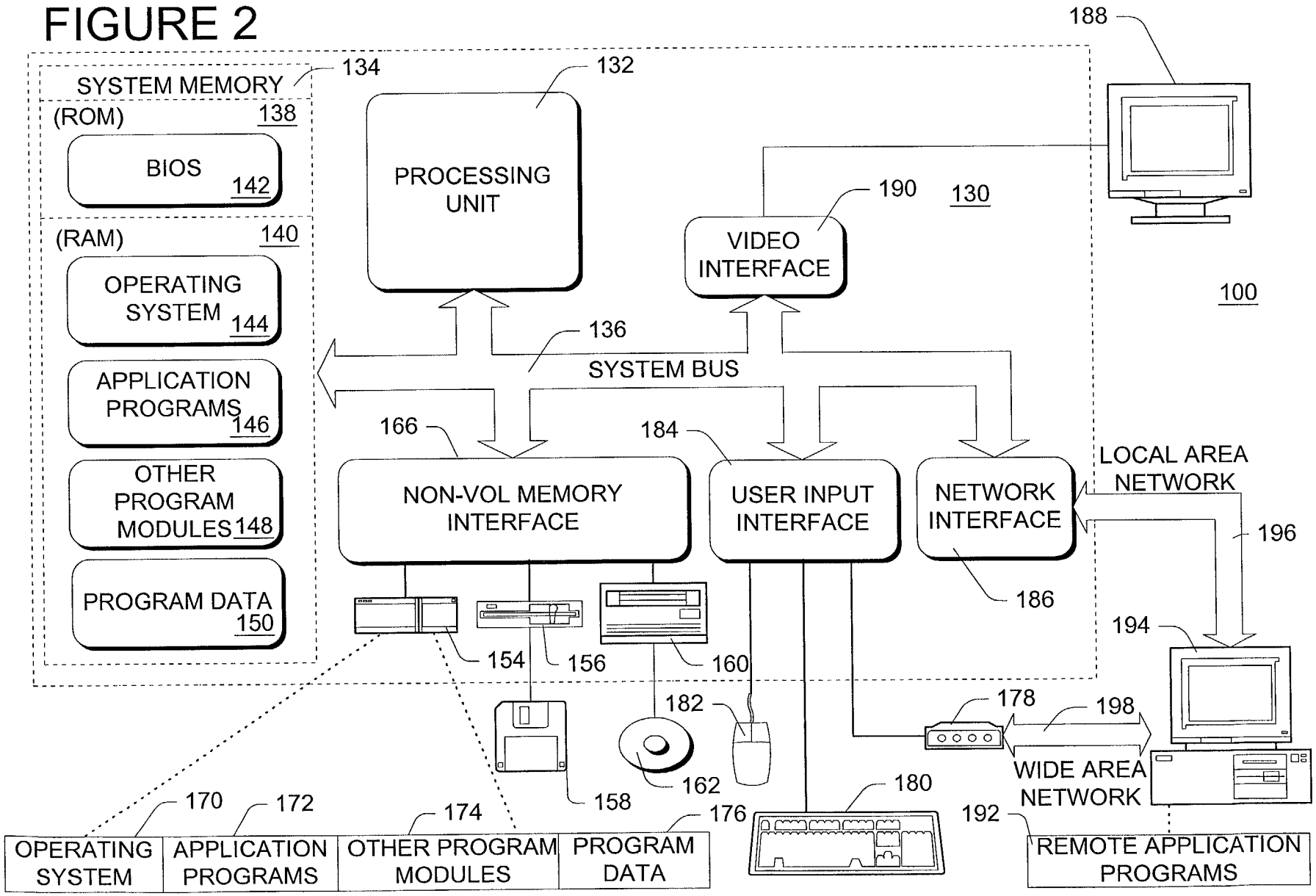

188
SYSTEM MEMORY
134
132
(ROM)
138
BIOS
142
PROCESSING UNIT
190
130
VIDEO INTERFACE
(RAM)
140
OPERATING SYSTEM
144
100
APPLICATION PROGRAMS
146
136
SYSTEM BUS
OTHER PROGRAM MODULES
148
166
184
LOCAL AREA NETWORK
NON-VOL MEMORY INTERFACE
USER INPUT INTERFACE
NETWORK INTERFACE
196
PROGRAM DATA
150
186
194
154
156
160
182
178
198
158
162
180
WIDE AREA NETWORK
170
172
174
176
192
OPERATING SYSTEM
APPLICATION PROGRAMS
OTHER PROGRAM MODULES
PROGRAM DATA
REMOTE APPLICATION PROGRAMS

FIGURE 3

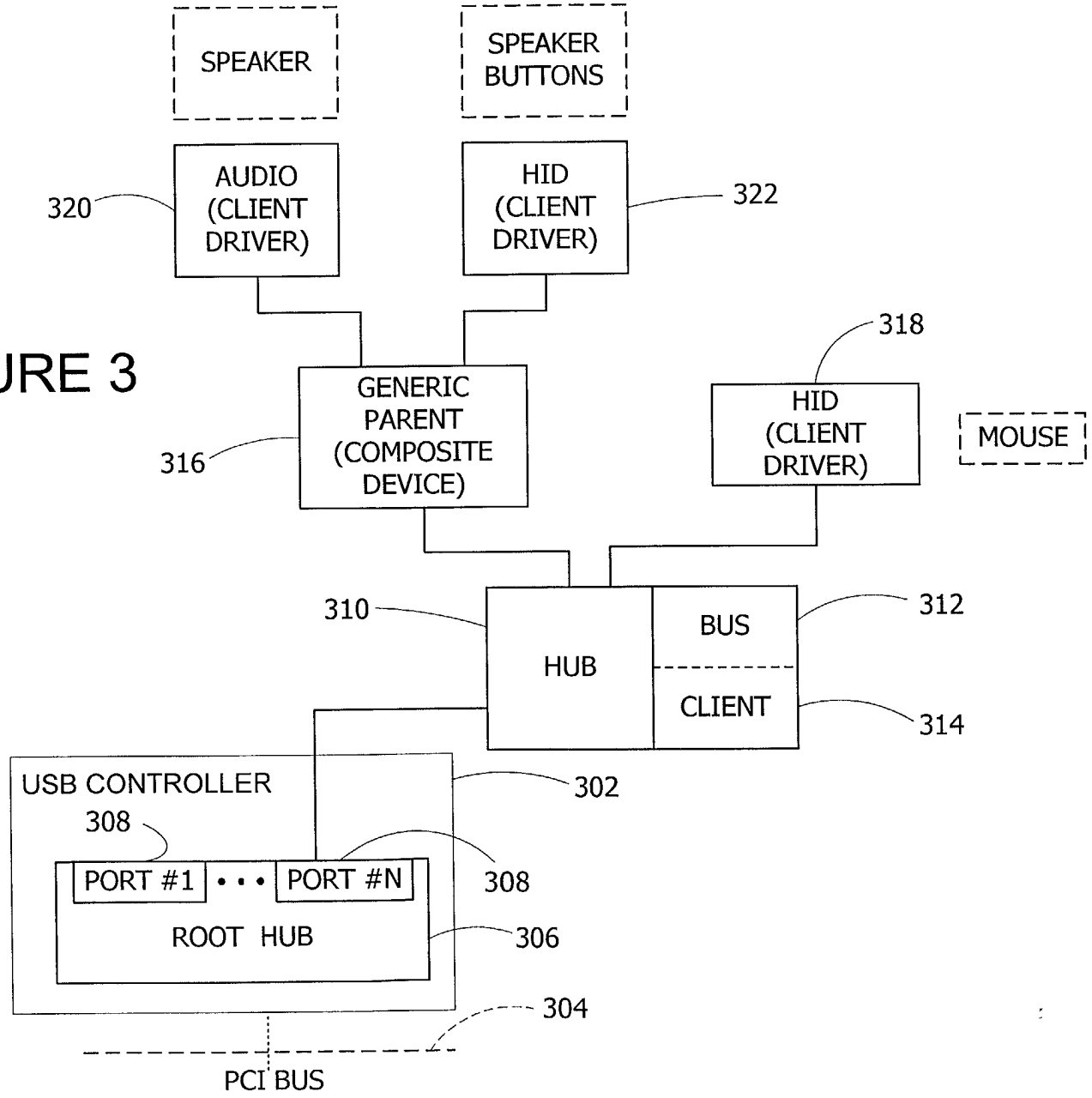

SPEAKER
SPEAKER BUTTONS
AUDIO (CLIENT DRIVER)
320
HID (CLIENT DRIVER)
322
318
GENERIC PARENT (COMPOSITE DEVICE)
316
HID (CLIENT DRIVER)
MOUSE
310
HUB
BUS
CLIENT
312
314
USB CONTROLLER
302
308
PORT #1
PORT #N
308
ROOT HUB
306
304
PCI BUS

FIGURE 4

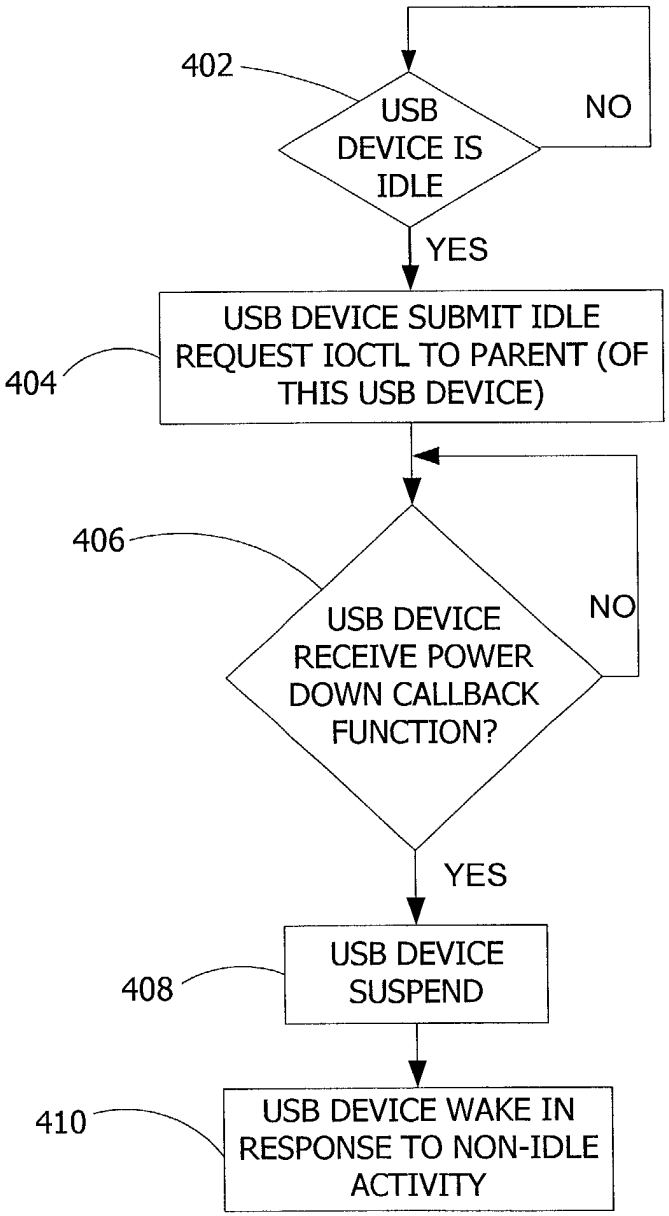

402
USB DEVICE IS IDLE
NO
YES
USB DEVICE SUBMIT IDLE REQUEST IOCTL TO PARENT (OF THIS USB DEVICE)
404
406
USB DEVICE RECEIVE POWER DOWN CALLBACK FUNCTION?
NO
YES
USB DEVICE SUSPEND
408
USB DEVICE WAKE IN RESPONSE TO NON-IDLE ACTIVITY
410

FIGURE 5

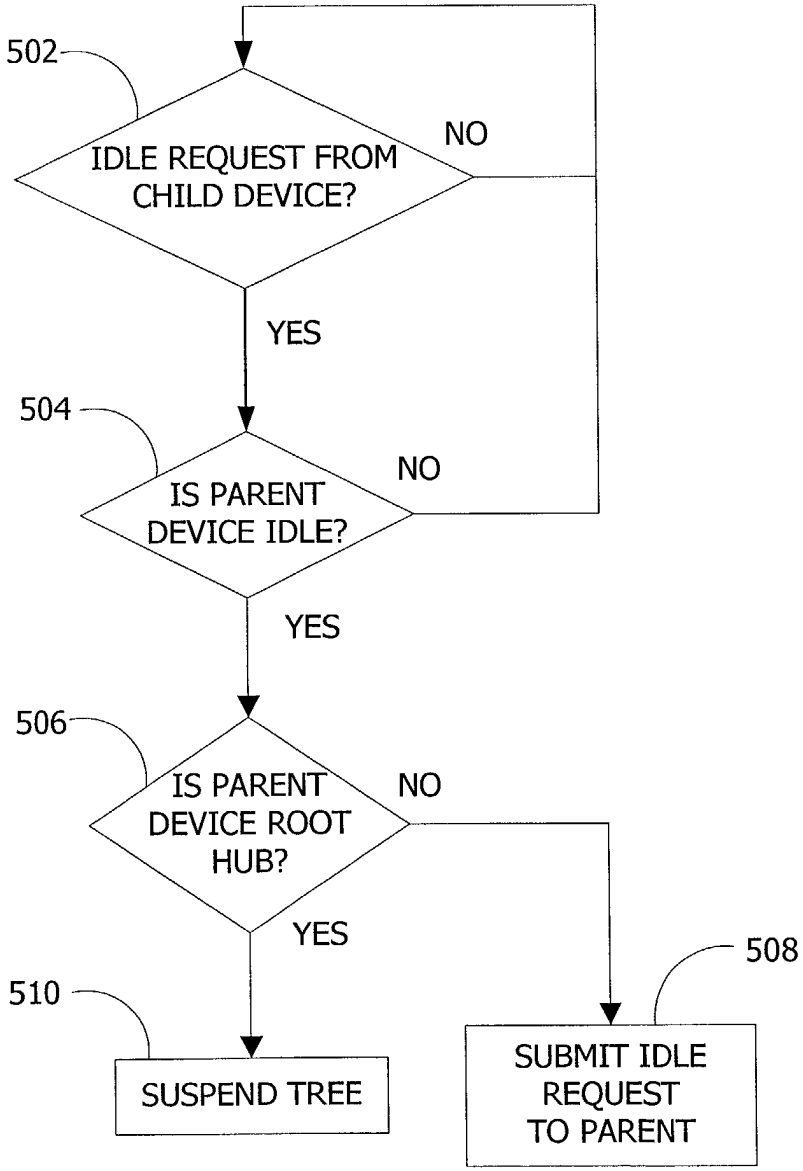

502
IDLE REQUEST FROM CHILD DEVICE?
NO
YES
504
IS PARENT DEVICE IDLE?
NO
YES
506
IS PARENT DEVICE ROOT HUB?
NO
YES
508
510
SUSPEND TREE
SUBMIT IDLE REQUEST TO PARENT

FIGURE 6

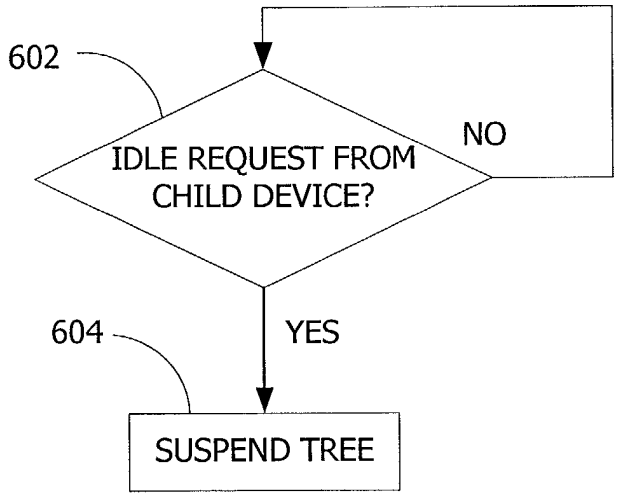


FIGURE 7

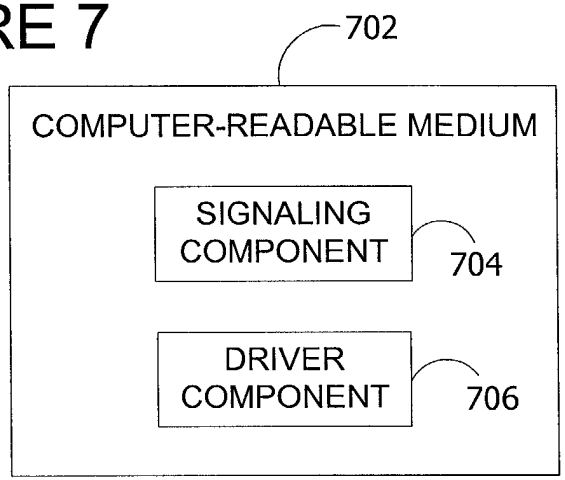


FIGURE 8

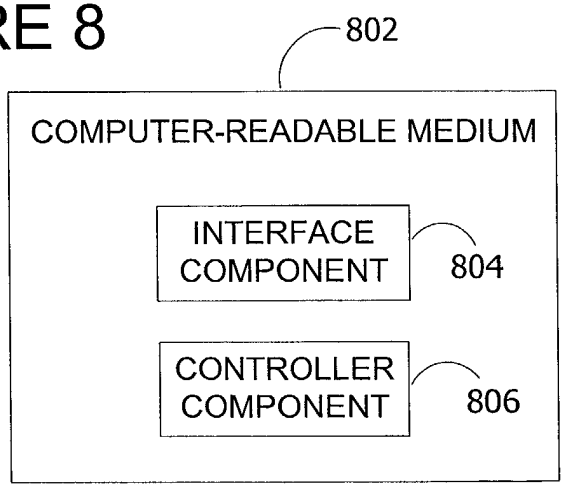
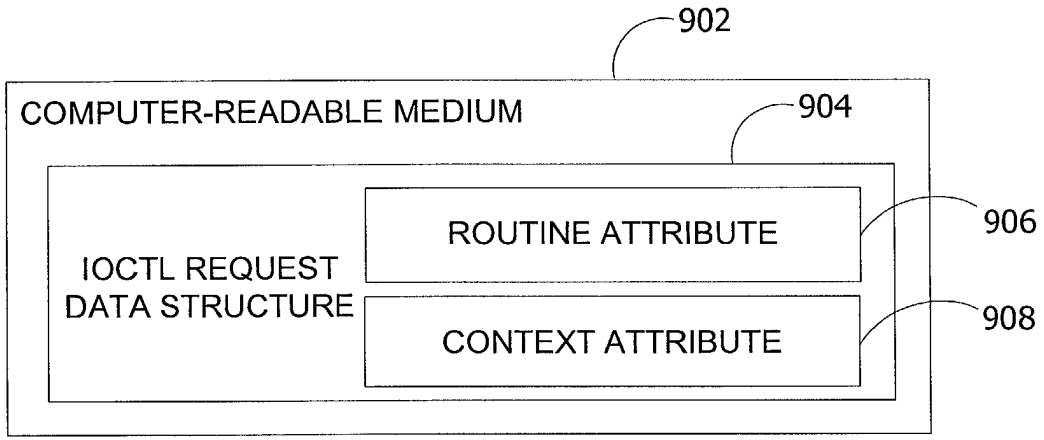


FIGURE 9


902
COMPUTER-READABLE MEDIUM
904
IOCTL REQUEST DATA STRUCTURE
ROUTINE ATTRIBUTE
906
CONTEXT ATTRIBUTE
908